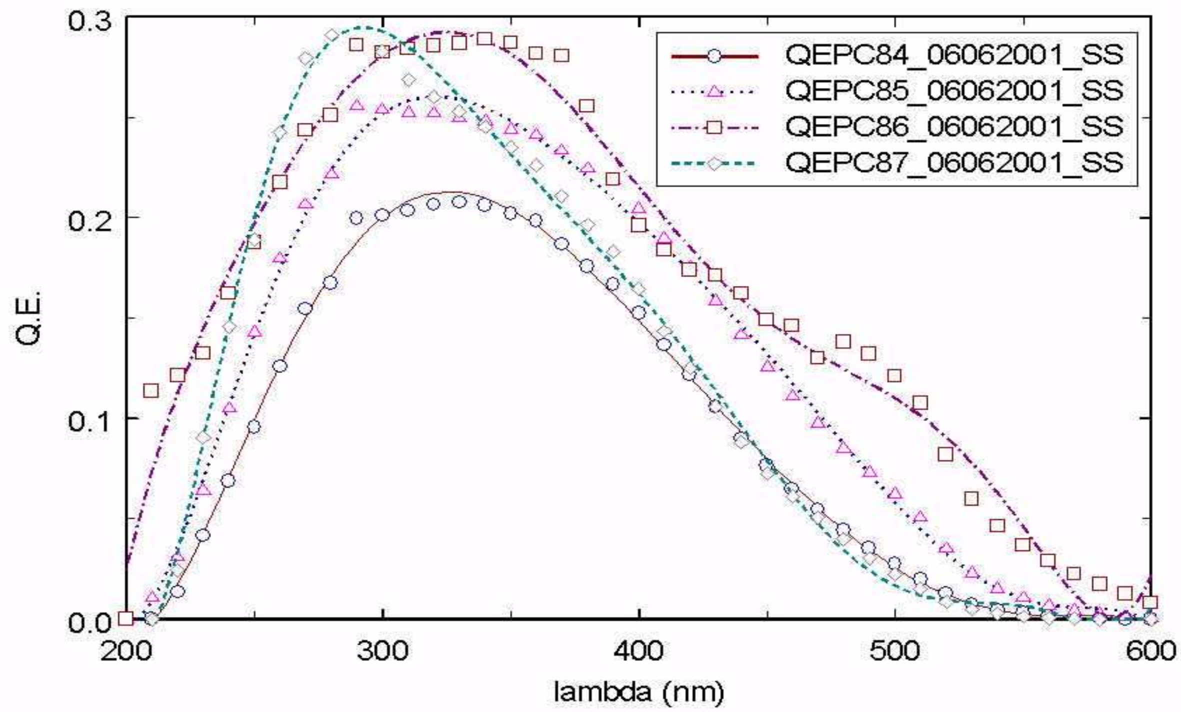
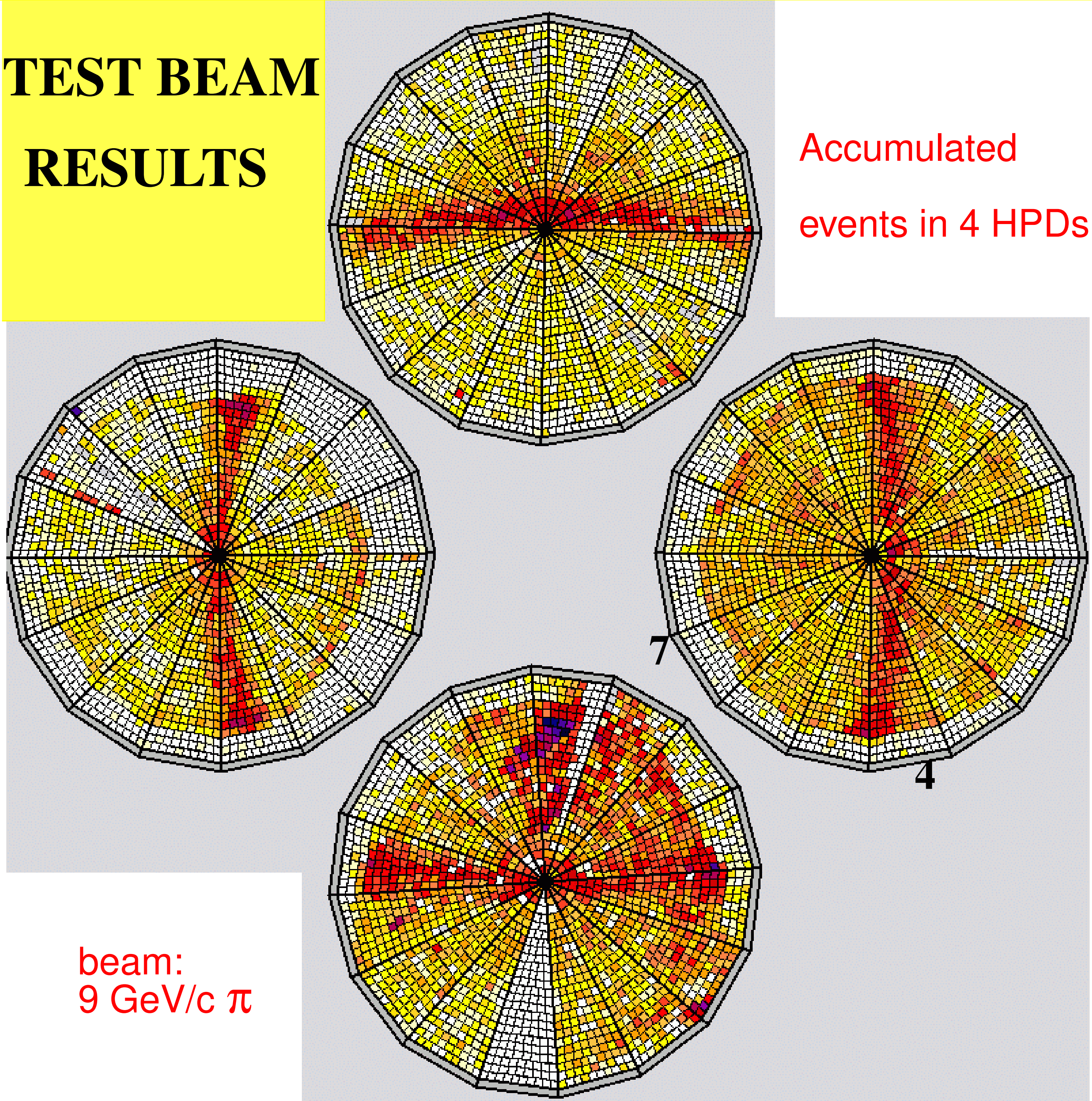
Bialkali (K_2CsSb) Photocathode: Quantum Efficiency ~ 30% at 350 nm :



During the test the tubes were operated at 16 KV

READOUT: Viking VA2 analog read-out chips (128 channel of charge amplifier, shaper, sample&hold unit, multiplexer)

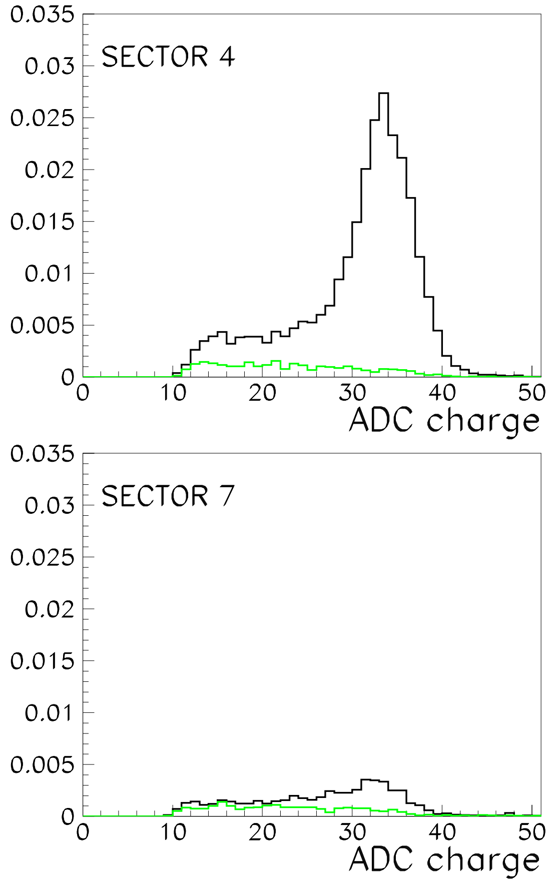
TEST BEAM RESULTS



Accumulated events in 4 HPDs

beam:
9 GeV/c π

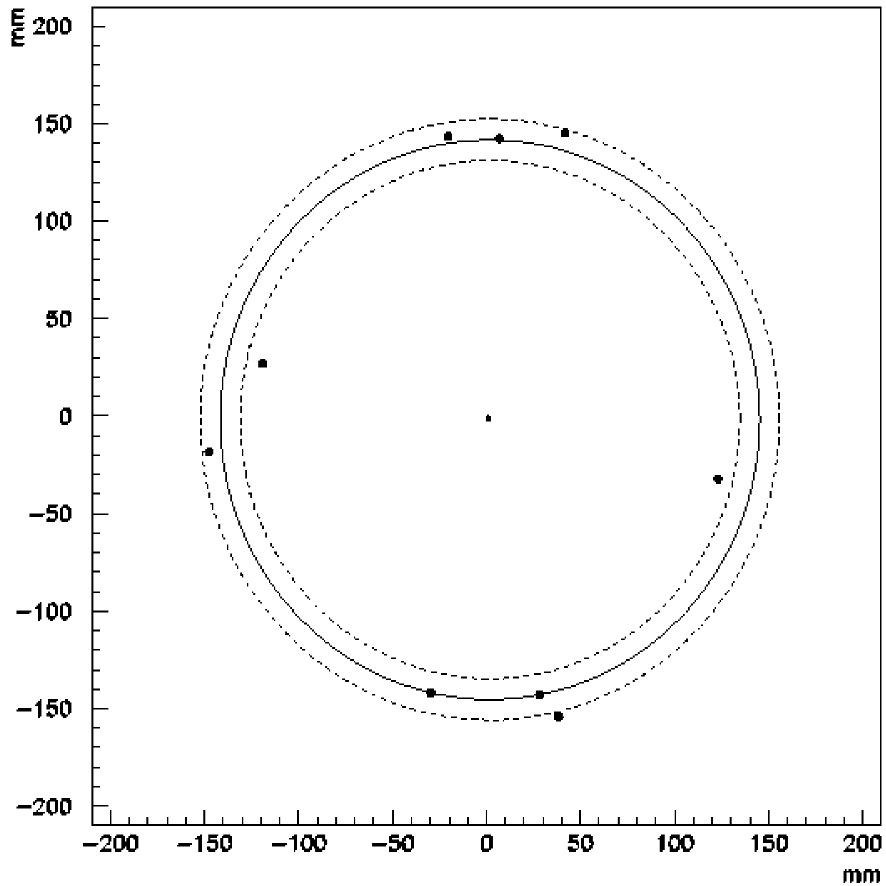
ADC spectra in one sector (128 pixel)

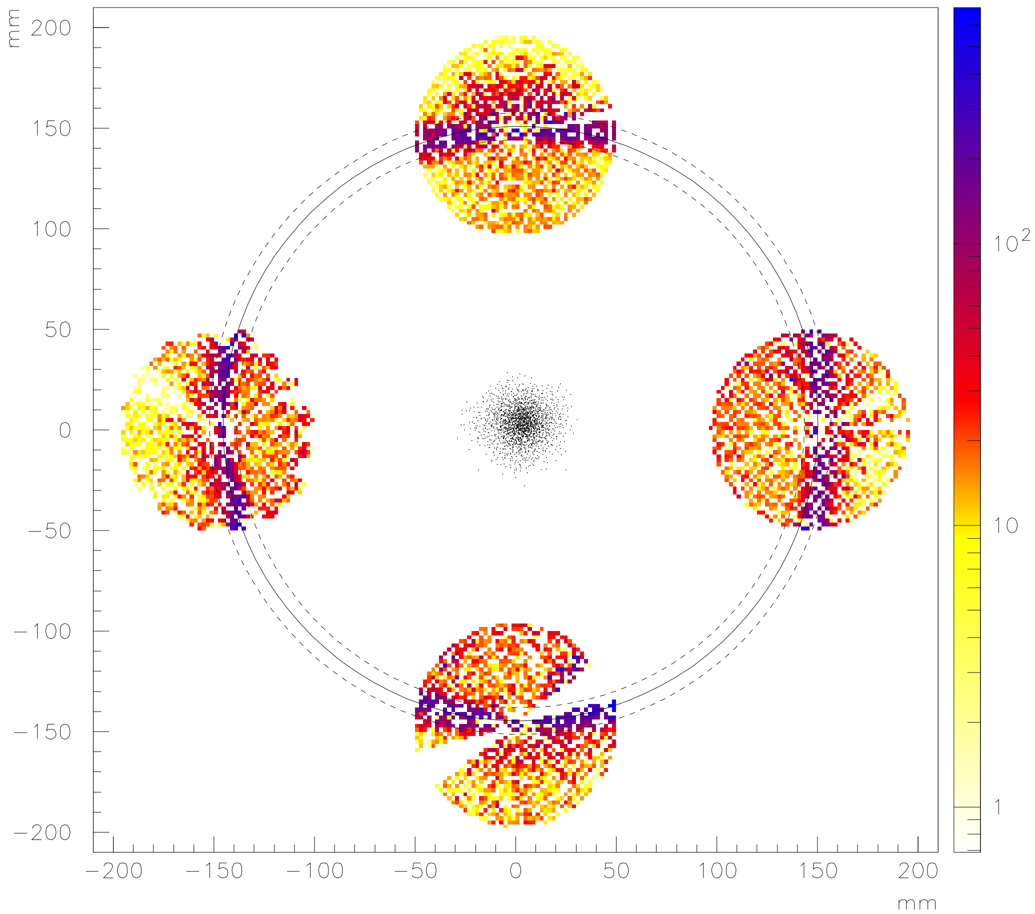


Average noise per pixel << 1$^{o}/_{oo}$

Background contribution measured out of spill

Fit to a ring in single events





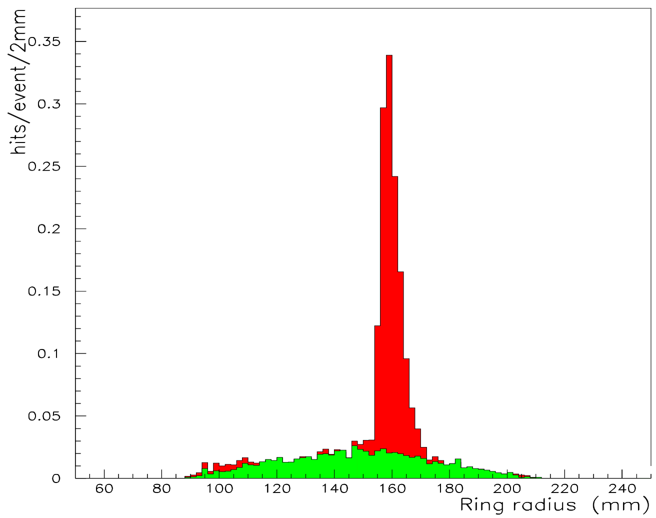
PHOTON COUNTING

Ring fitted across the measured arcs (accumlated events)

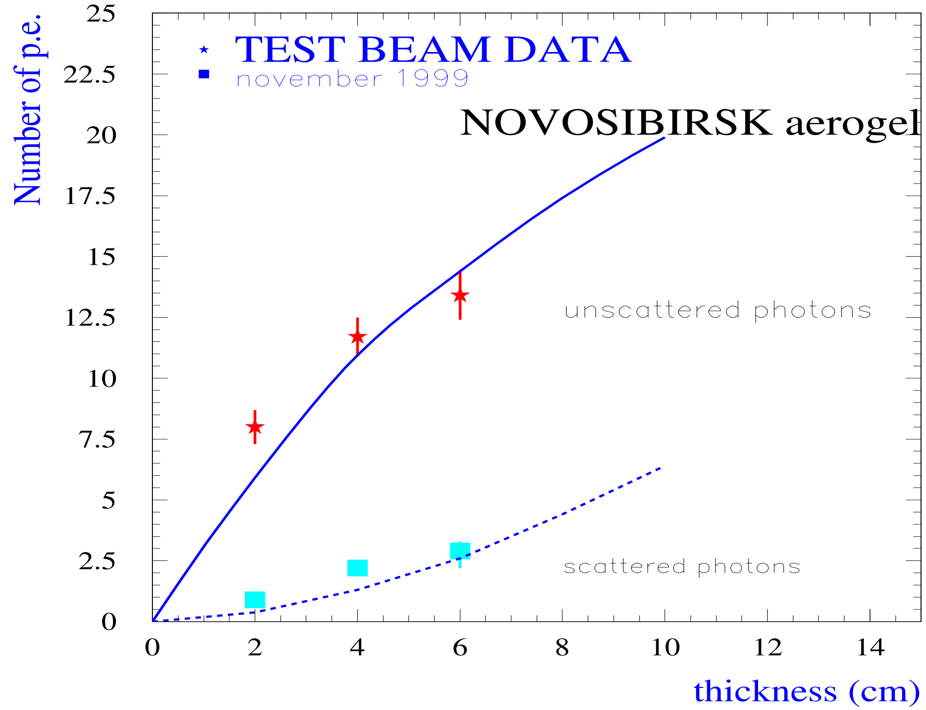
$N_{measured}$: photons detected in the ring region ($R \pm 3\ \sigma_R$) in 1 HPD

$N_{extrapolated}$: corrected for acceptance and signal losses (inefficiencies, back scattering)

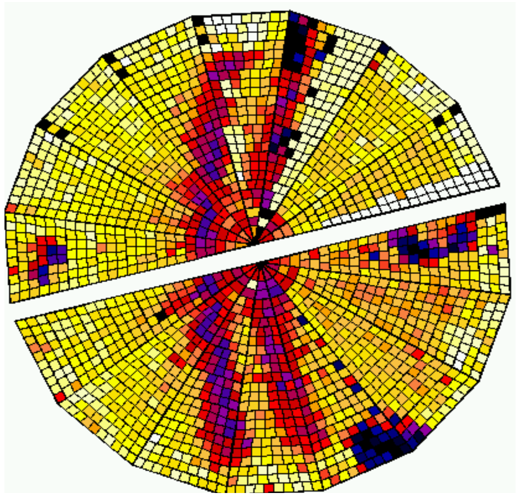
Ring Radius



Aerogel		N measured	N extrapolated
Novosibirsk	2 cm	0.84 ± 0.04	9.2 ± 0.7
	4 cm	1.16 ± 0.04	12.7 ± 0.9
	6 cm	1.33 ± 0.04	14.5 ± 1.1
Matsu.	6 cm	0.62 ± 0.09	6.5 ± 1.1

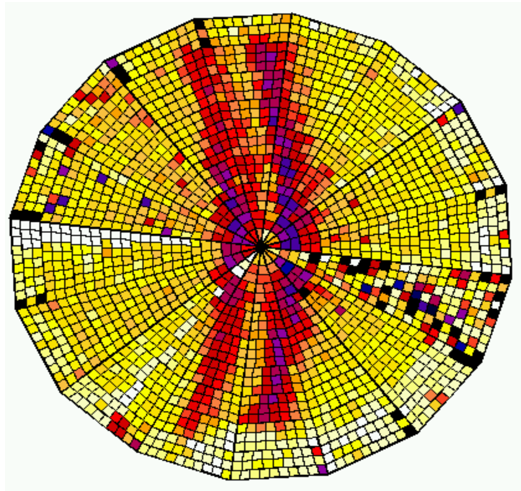


PARTICLE IDENTIFICATION

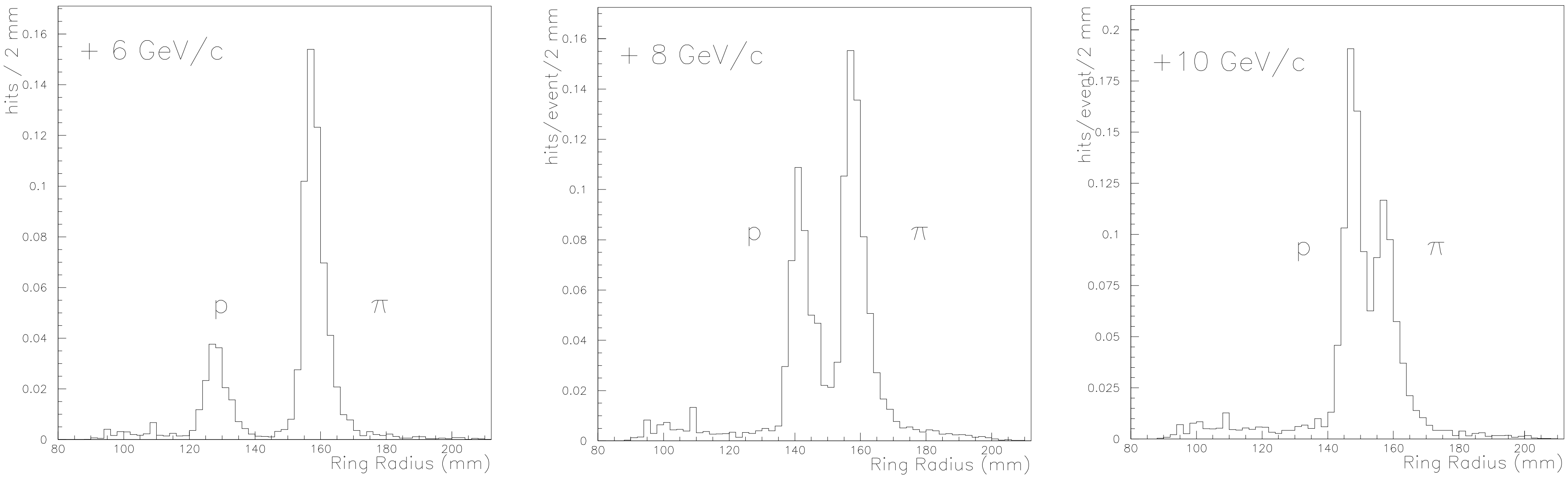


+ 8 GeV/c beam

pion and proton
ring separation



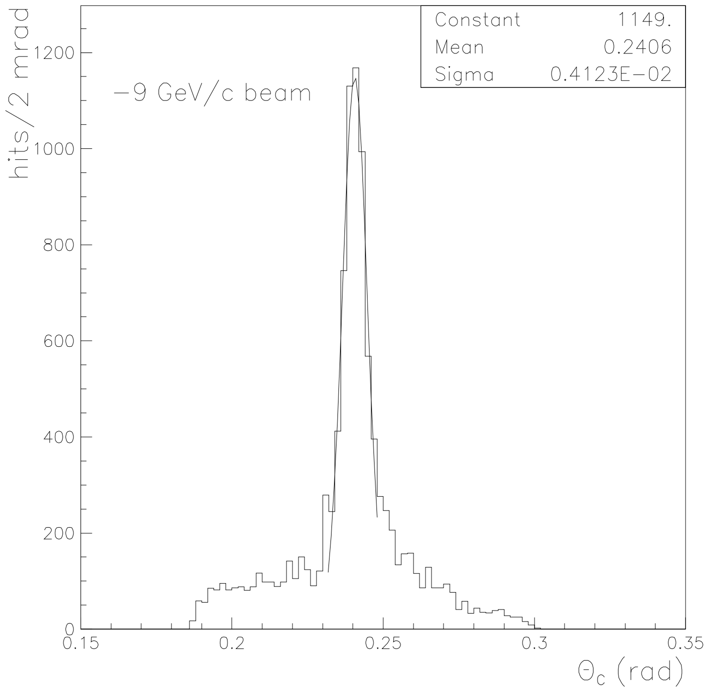
Ring Radius at different energies:



CHERENKOV ANGLE RECONSTRUCTION

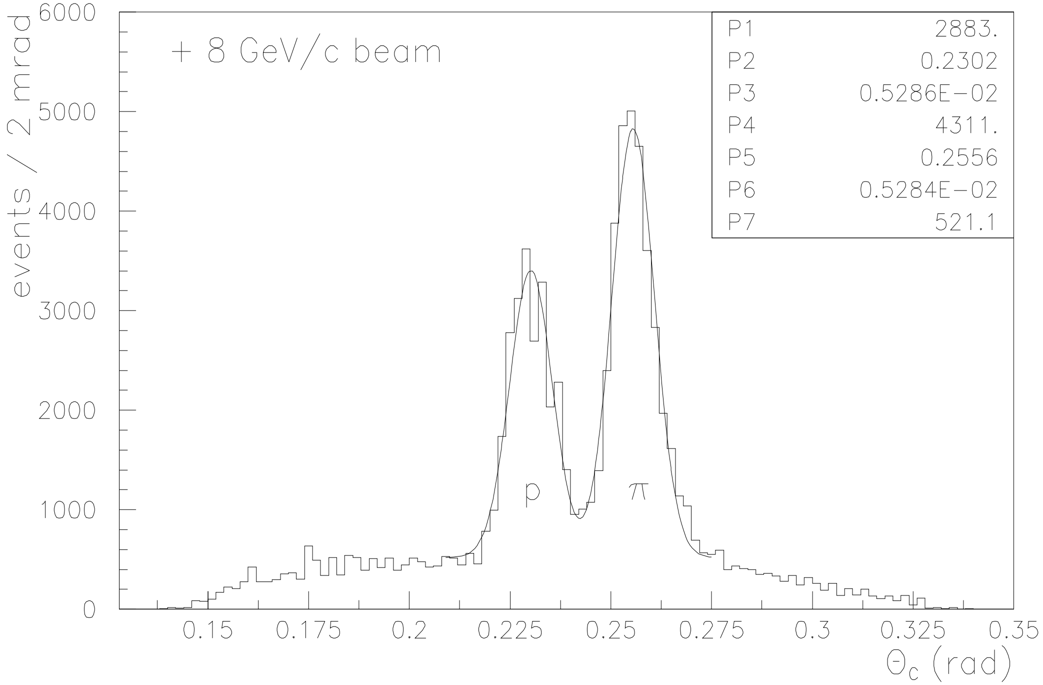
Direct reconstruction of Cherenkov angle
by retracking each detected photon

pion beam 9 GeV/c



MAY 2001

pion and proton beam 8 GeV/c

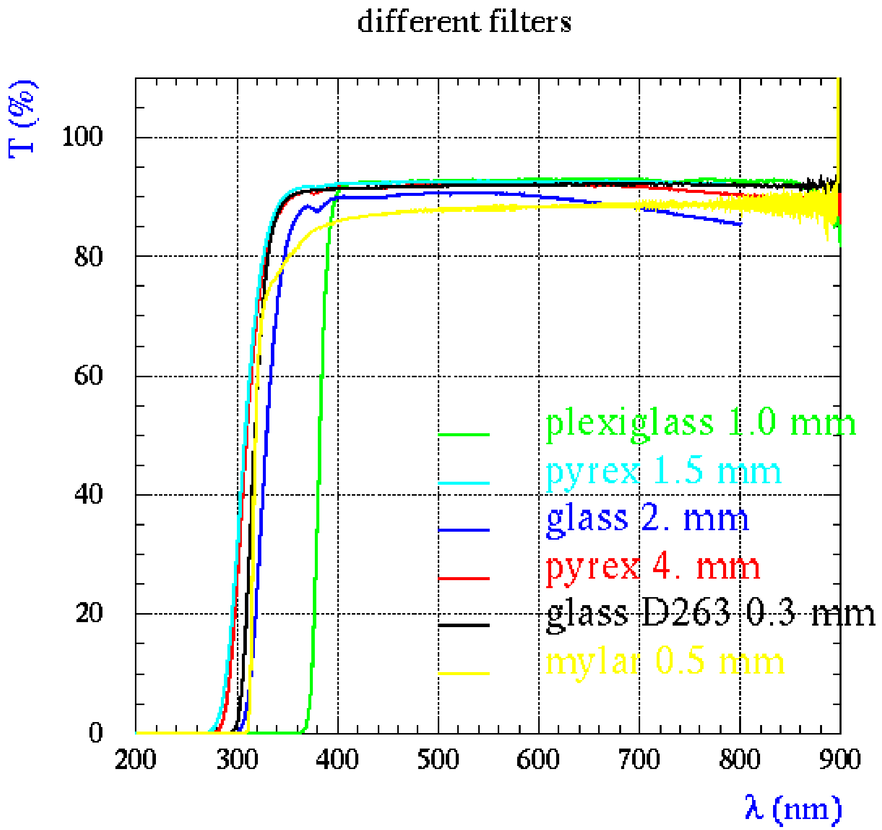


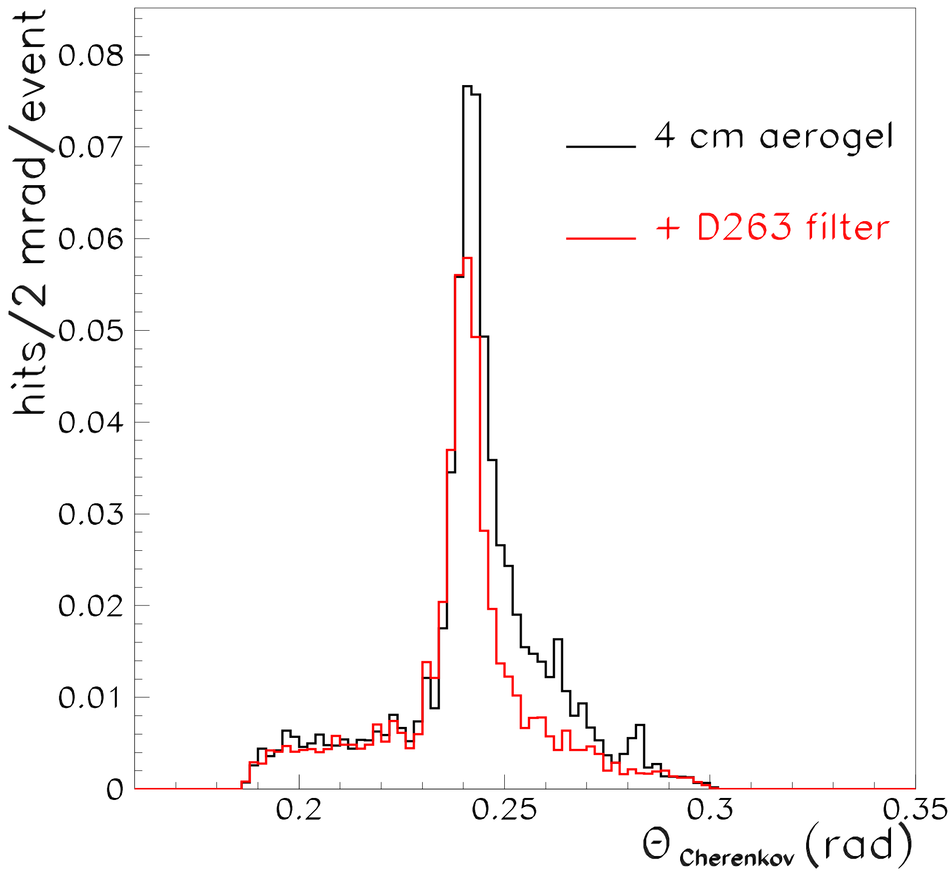
OCTOBER 1999

ANGULAR RESOLUTION

The main contribution to the resolution is from the achromaticity of emitted photons

Study of different filters (placed beyond the aerogel) to cut produced light with λ ~< 300 nm





CONCLUSIONS

- Two succesful test beam performed at Cern PS
  with silica aerogel as RICH radiator

- Photon yield in agreement with Monte Carlo predictions

- Hadron identification from aerogel Cherenkov rings proved

- More results coming from final analysis of May 2001 data